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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/553,411

10/17/2005

Martin Bossert

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EXAMINER

CHENG, ICHIEH

ART UNIT

PAPER NUMBER

4183

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DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/553,411	<b>Applicant(s)</b> BOSSERT ET AL.	
	<b>Examiner</b> ICHIEH CHENG	<b>Art Unit</b> 4183	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 17 October 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 9-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_\_ is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10/17/2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>10/17/2005</u> .  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Claim Objections***

1. Claim 17 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 17 claims the same subject matter (common pattern) as previously claimed in claim 15.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim 9-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Sugar et al. (US 6785520)

As to claim 9, Sugar et al. disclose a method of transmitting data by radio, comprising: using a plurality of subcarriers of a frequency band and a plurality of antennas for transmission such that each antenna transmits data using the plurality of the subcarriers (Fig 1, column 2 line 34 - column 4 line 22); dividing data for transmission into a plurality of elements such that the number of data elements corresponds to the number of subcarriers (Fig 8, column 7, lines 20-51); for each

antenna, assigning each element to a subcarrier for transmission, such that for at least two antennas and at least one subcarrier, different elements are assigned to said one subcarrier (Fig 8, column 7, lines 20-51); and before performing an OFDM modulation for each antenna, multiplying each element by an antenna-specific and an element-specific factor (Fig 8, column 7, lines 20-51).

As to claim 10, Sugar et al. disclose wherein the factor is a complex or real number, the absolute value of the factor being 1 (column 2 line 34 - column 4 line 22).

As to claim 11, Sugar et al. disclose wherein for at least two antennas a common pattern is used to assign each element to a corresponding subcarrier (Fig 8, column 7, lines 20-51).

As to claim 12, Sugar et al. disclose wherein the common pattern is a cyclic permutation (Fig 8, column 7, lines 20-51).

As to claim 13, Sugar et al. disclose a method of transmitting data by radio, comprising: using a plurality of subcarriers of a frequency band and a plurality of antennas for transmission such that each antenna transmits data using the plurality of the subcarriers (Fig 1, column 2 line 34 - column 4 line 22); dividing data for transmission into a plurality of data elements such that the number of data elements corresponds to the number of subcarriers (Fig 8, column 7, lines 20-51); for each antenna, assigning each element to a subcarrier for transmission, such that for at least two antennas and at least one subcarrier, different elements are assigned to said one subcarrier (Fig 8, column 7, lines 20-51); performing an OFDM modulation for each antenna to produce timing sequences of time- dependent signals (Fig 8, column 7, lines

20-51); and for at least one antenna, rearranging the order of the time-dependent signals after OFDM modulation (Fig 8, column 7, lines 20-51).

As to claim 14, Sugar et al. disclose wherein for at least two antennas, the order is rearranged in accordance with a common pattern (Fig 8, column 7, lines 20-51).

As to claim 15, Sugar et al. disclose wherein the common pattern is a cyclic permutation (Fig 8, column 7, lines 20-51).

As to claim 16, Sugar et al. disclose wherein for at least two antennas a common pattern is used to assign each element to a corresponding subcarrier (Fig 8, column 7, lines 20-51).

As to claim 17, Sugar et al. disclose wherein the common pattern is a cyclic permutation (Fig 8, column 7, lines 20-51).

As to claim 18, Sugar et al. disclose wherein for at least two antennas a common pattern is used to assign each element to a corresponding subcarrier (Fig 8, column 7, lines 20-51).

As to claim 19, Sugar et al. disclose wherein the common pattern is a cyclic permutation (Fig 8, column 7, lines 20-51).

As to claim 20, Sugar et al. disclose a transmitter (Fig 8) to transmit data by radio using a plurality of subcarriers of a frequency band and a plurality of antennas for transmission such that each antenna transmits data using the plurality of subcarriers (Fig 8, column 7, lines 20-51), comprising: division means (Fig 8, column 7, lines 20-51) for dividing the data into a plurality of elements such that the number of elements corresponds with the number of subcarriers; and an OFDM modulator (Fig 8, column 7,

lines 20-51) to perform OFDM modulation for each antenna to produce time- dependent signals; wherein the transmitter comprises either: multiplication means (Fig 8, label 510) for multiplying each element for each antenna by an antenna-specific and element-specific factor before OFDM modulation (OFDM), or rearrangement means (Fig 8, column 7, lines 20-51) for rearranging the order of the time-dependent signals after OFDM modulation.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ICHIEH CHENG whose telephone number is (571)270-1941. The examiner can normally be reached on Monday to Thursday 7:30am to 5:00pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Len Tran can be reached on 571-272-1184. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ichieh Cheng/  
Examiner, Art Unit 4183

3/19/08

IC  
/Len Tran/  
Supervisory Patent Examiner, Art Unit 4183